

## CLAIMS

1. A method of controlling communications in a shared protection architecture, where first and second network elements support communications over a plurality of working channels of respective rings using a shared protection channel common to all of said rings, comprising the steps of:

responsive to an indicated span switch on a first ring, passing control information for said first ring over said shared protection channel while indicating availability of the shared protection channel to rings other than said first ring; and

responsive to an indication that the shared protection channel is needed to pass communications traffic for a second ring, ceasing to pass the control information for said first ring over said shared protection channel and indicating the non-availability of the shared protection channel to rings other than said second ring.

2. The method of claim 1, and further comprising the step of indicating a lockout of protection (LOP) for any ring indicating a span switch while the span switch exist on said first ring and prior to said indication that the shared protection channel is needed to pass communications.

3. The method of claim 1 wherein said step of indication the non-availability of the shared protection ring comprises the step of generating a lockout of protection (LOP) on protection channels for any ring other than said second ring while said shared protection span is need to pass communications for said second ring.

4. The method of claim 1 wherein said step of ceasing to pass control information is responsive to an indicated ring switch on said second ring.

5. The method of claim 4 wherein said step of ceasing to pass control  
2 information is responsive to span switch on said second ring formed between  
said first and second network elements.

6. The method of claim 4 and further comprising the step of  
2 generating a span switch signal on non-shared protection channels associated  
with said second ring.

7. A communications network using a shared protection architecture  
2 over a plurality of communication rings, each ring comprising one or more  
working channels for passing communications traffic, comprising:  
4 first and second shared protection network elements supporting  
communications traffic over a working channels for a predetermined set of said  
6 rings using a shared protection channel, said first and second shared protection  
network elements including control circuitry for:  
8 passing control information for a first ring over said shared  
protection channel while indicating availability of the shared protection channel  
10 to rings other than said first ring, responsive to an indicated span switch on a  
first ring; and  
12 ceasing to pass the control information for said first ring over said  
shared protection channel, responsive to an indication that the shared protection  
14 channel is needed to pass communications traffic for a second ring; and  
circuitry for indicating the non-availability of the shared protection  
16 channel to rings other than said second ring, responsive to an indication that the  
shared protection channel is needed to pass communications traffic for a second  
18 ring.

8. The communications network of claim 7, wherein said control  
2 circuitry further comprising circuitry for indicating a lockout of protection (LOP)  
for any ring indicating a span switch while the span switch exist on said first ring

4 and prior to said indication that the shared protection channel is needed to pass  
communications.

9. The communications network of claim 7 wherein said circuitry for  
2 indicating the non-availability of the shared protection ring comprises circuitry  
for generating a lockout of protection (LOP) on protection channels for any ring  
4 other than said second ring while said shared protection span is need to pass  
communications for said second ring.

10. The communications network of claim 7 wherein said circuitry for  
2 ceasing to pass control information is responsive to an indicated ring switch on  
said second ring.

11. The communications network of claim 10 wherein said circuitry for  
2 ceasing to pass control information is responsive to a span switch on said second  
ring formed between said first and second network elements.

12. The communications network of claim 11 wherein said control  
2 circuitry further comprises circuitry for generating a span switch signal on non-  
shared protection channels associated with said second ring.

13. A shared protection network element for use in a communications  
2 network using a shared protection architecture wherein communications traffic  
is passed over a plurality of communication rings, each ring comprising one or  
4 more working channels for passing communications traffic, and where a shared  
protection channel is used by the network element to protect a set of said  
6 working channels, comprising:

circuitry for passing control information for a first ring over said  
8 shared protection channel while indicating availability of the shared protection  
channel to rings other than said first ring, responsive to an indicated span switch  
10 on a first ring;

12       circuitry for ceasing to pass the control information for said first  
13       ring over said shared protection channel, responsive to an indication that the  
14       shared protection channel is needed to pass communications traffic for a second  
15       ring; and  
16       circuitry for indicating the non-availability of the shared protection  
17       channel to rings other than said second ring, responsive to an indication that the  
18       shared protection channel is needed to pass communications traffic for a second  
19       ring.

20       14.     The communications network of claim 13 and further comprising  
21       circuitry for indicating a lockout of protection (LOP) for any ring indicating a  
22       span switch while the span switch exists on said first ring and prior to said  
23       indication that the shared protection channel is needed to pass communications.

24       15.     The communications network of claim 13 wherein said circuitry for  
25       indicating the non-availability of the shared protection ring comprises circuitry  
26       for generating a lockout of protection (LOP) on protection channels for any ring  
27       other than said second ring while said shared protection span is need to pass  
28       communications for said second ring.

29       16.     The communications network of claim 13 wherein said circuitry for  
30       ceasing to pass control information is responsive to an indicated ring switch on  
31       said second ring.

32       17.     The communications network of claim 16 wherein said circuitry for  
33       ceasing to pass control information is responsive to a span switch on said second  
34       ring formed between said first and second network elements.

35       18.     The communications network of claim 17 and further comprising  
36       circuitry for generating a span switch signal on non-shared protection channels  
37       associated with said second ring.